# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL | 97-015

INSTRUCTIONS

1. The preparing activity must complete blocks 1,2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

| **I RECOMMEND A CHANGE:** | 1. DOCUMENT NUMBER | 2. DOCUMENT DATE (YYMMDD)<br>**970207** |
|---|---|---|

3. DOCUMENT TITLE
**TAG REGISTRY**

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

**Add a new SDE (See attached sheets.)**

5. REASON FOR RECOMMENDATION
**To provide processing information and describe the state of the image data at any point in the image chain.**

6. SUBMITTER

| a. NAME *(Last, First, Middle Initial)*<br>**George Jackson** | b. ORGANIZATION<br>**Lockheed Martin Corporation** | |
|---|---|---|
| c. ADDRESS *(Include Zip Code)*<br>**2227 1/2 Nelson Avenue**<br>**Redondo Beach, CA 90278** | d. TELEPHONE *(Include Area Code)*<br>(1) Commercial<br>**(310) 363-8441**<br>(2) AUTOVON *(If applicable)* | 7. DATE SUBMITTED *(YYMMDD)*<br>**970224** |

8. PREPARING ACTIVITY
**NATIONAL IMAGERY AND MAPPING AGENCY**

| a. NAME | b. TELEPHONE *(Include Area Code)*<br>(1) Commercial (2) AUTOVON |
|---|---|
| c. ADDRESS *(Include Zip Code)* | **IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:**<br>Defense Quality and Standardization Office<br>5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466<br>Telephone (703) 756-2340 AUTOVON 289-2340 |

PURPOSE

The primary purpose of the new SDE is to serve as a legacy record of the processing functions that have been applied to the image. The basic structure of the SDE is shown tables 1 and 2. Table 1 contains the basic tag information such as name and length. Table 2 contains a list of the user defined fields available in the tag. The first several fields are required such as the Data Mapping ID and the number of processing events. The majority of the fields are either optional or conditional, and should be used only as needed by the user. Table 3 contains a description of the valid contents of the user defined fields and any constraints on the fields' use. Note that the first processing event would be the first element in the image chain that produces the NITF format.

INTENDED USE OF NEW SDE

The overall intent of this TAG is to provide processing information and describe the state of the image data at any point in the image chain. The structure of the TAG is meant to be utilized in the following manner. When the NITF image is created, the TAG shall be initialized by completing the required information in the first several fields. The CEL field shall be filled with the full length of the TAG. The next four fields are also required: the Data Mapping ID (LUT), the total and actual number of data bits (NBPP and ABPP), the number of processing events (NEVENTS), and the first processing event (EVENT01). (The first processing event should refer to the creation of the NITF image.) Although the NBPP and ABPP fields might be altered by each NITF user, these fields shall not be duplicated with each processing event.

Each processing event note consists of four required pieces of information: the processing event note length (EVENTLEN), the processing facility (PFAC), processing comments (COMMENTS), and the number of output bits after the specified processing event has taken place (OBPP). The next piece of information should be chosen from the list in Table 2 to describe the actual processing event. In some cases, there may also be a conditional field to denote a specific processing parameter, such as DRA brightness parameter (DRAB). Each time a new processing event is added to the TAG, the following fields shall be included: EVENTLEN, PFAC, COMMENTS, OBPP, and one or two fields to describe the processing event. This type of approach should keep the TAG size from becoming exceedingly large.

Table 1: History Record for System B Data

| FIELD | NAME | SIZE | RANGE | TYPE |
|---|---|---|---|---|
| CETAG | System B extension tag | 6 | “BHISTA” | R |
| CEL | Length of extension tag | 5 | Variable | R |
| LUT | Data mapping ID | 2 | 01 - 64 | R |
| NBPP | Total bits per pixel | 2 | 01 - 16 | R |
| ABPP | Actual bits per pixel | 2 | 01 - 16 | R |
| NEVENTS | Number of processing events | 2 | 00 - 99 | R |
| EVENT01 | First processing event | 98 | alphanumeric (See Table 2) | R |
| ... | ... | ... | ... | ... |
| EVENTnn | Most recent processing event | 98 | alphanumeric (See Table 2) | R |

For each processing event, fill required fields and chose optional field from list (IC - MONCOMP)

Table 2: User Defined field format

| | | | | |
|---|---|---|---|---|
| EVENTLEN | Processing note length | 2 | 01 - 98 | R |
| PFAC | Processing facility | 10 | alphanumeric | R |
| COMMENTS | Processing comments | 80 | alphanumeric | R |
| OBPP | # of output bits (processed) | 4 | 01 - 16 | R |
| IC | Image compression | 4 | **see notes** | O |
| BITRATE | Bit rate compression | 4 | 00.0 - 99.9 | C |
| IE | Image expansion | 2 | **see notes** | O |
| DISP | Display-ready flag | 1 | 1 = yes, 0 = no | O |
| FILT | Filtering or convolution | 1 | 1 = yes, 0 = no | O |
| RESAMP | Resampling | 1 | 1 = yes, 0 = no | O |
| DRA | DRA applied | 1 | 1 = yes, 0 = no | O |
| DRAB | DRA brightness parameter | 4 | 0000 - 0050 | C |
| DRAH | DRA haze parameter | 4 | 0000 - 0500 | C |
| TTC | TTC applied | 2 | 1 = yes, 0 = no | O |
| TTCFAM | TTC family number | 2 | 00 - 04 | C |
| TTCNUM | TTC member number | 2 | 00 - 64 | C |
| MONCOMP | Monitor comp applied | 1 | 1 = yes, 0 = no | O |

TABLE 3: CONTROLLED TAGGED RECORD EXTENSION FIELD DESCRIPTION

| FIELD | USER DEFINED FIELD DEFINITIONS |
|---|---|
| CEL | This field shall contain the total length of the TAG. |
| LUT | This field shall contain the data mapping ID. If the ID is between 12-64, the image is lin-log, If the ID is 7 or 8, the image is PEDF. This field can be used by NITF users to determine whether the image is lin-log or PEDF, which in turn, will determine what type of processing should be applied to the image. |
| NBPP | This field shall contain the total number of bits in the image. This parameter is also found in the image sub-header. |
| ABPP | This field shall contain the actual number of bits in the image. This parameter is also found in the image sub-header. |
| NEVENTS | This field shall contain the number of processing events associated with the image. The processing events are listed in chronological order, starting with the first processing event and ending with the most recent processing event. It is recommended that the first processing event for all imagery be a reference to the original image creation. Each processing event is to record what transformations, if any, were applied to the image. The fields for each event are listed below. |
| EVENTLEN | This field shall contain the length of each processing event note. Although this field is fixed, specification of this length would allow for future expansion and compatibility with previous software versions. |
| PFAC | This field shall contain the processing facility where the processing functions are performed. The contents of this field should reference the NITFRD. |
| COM | This field shall contain comments as determined by the processing facility. |
| OBPP | This field shall contain the number of output bits after the processing step described in the processing note has been applied. |
| IC | This field shall contain the approved values for image compression. J12L = 12 bit JPEG lossy, J12N = 12 bit JPEG non lossy, J8L = 8 bit JPEG lossy, J8N = 8 bit JPEG non-lossy. |
| BITRATE | This field shall contain the various approved image compression bit rates. |
| IE | This field shall contain the approved values for image expansion. D1 = 1.29 DCT, D2 = 2.3 DCT, D4 = 4.3 DPCM, J12L = 12 bit JPEG lossy, J12N = 12 bit JPEG non lossy, J8L = 8 bit JPEG lossy, J8N = 8 bit JPEG non-lossy. |
| DISP | This field shall indicate if the image is display ready. A “1” indicates the image is display ready and needs only basic tonal processing and monitor compensation for correct display. A “0” indicates the image is not display ready and must be converted to a displayable format using the pre-defined mapping functions for lin-log or PEDF functions. |
| FILT | This field shall indicate if filtering (such as sharpening or anti-aliasing) or convolution has been applied to the image. Explanations are to be included in COMMENTS. |
| RESAMP | This field shall indicate if resampling (up or down) has been applied to the image. Explanations are to be included in COMMENTS. |

DRA This field shall indicate if DRA has been applied to the image. If the DRA field is 1, a DRA has been applied and if the field is 0, no DRA has been applied to the image. If the DRA field is 1, the brightness and haze values for the DRA will be provided in the DRAB and DRAH fields. The DRA field is optional and the DRAB and DRAH fields are conditional. The DRAB field provides the brightness value for the DRA and is a conditional field. The field is only used if the DRA field is 1. The value provided in this field was used as a multiplier in the DRA equation that was applied to the image. The DRA equation is:

DRA(x) = B * (x - H),

where x is the input image pixel, normalized to the range of 0 to 1, to the DRA, B is the brightness value provided in the DRAB field, and H is the haze parameter provided in the DRAH field. The DRAH field provides the haze value for the DRA and is a conditional field. The field is only used if the DRA field is 1. The value provided in this field was used as a subtractor in the DRA equation that was applied to the image. (See DRA equation above.)

DRAB This field contains the brightness value only if DRA = 1 above.

DRAH This field contains the haze value only if DRA = 1 above.

TTC This field shall indicate if a TTC has been applied to the image.

TTCFAM This field shall indicate the TTC family (refers to IDEX) if a TTC has been applied.

TTCNUM This field shall indicate the TTC member number (refers to IDEX) if a TTC has been applied.

MONCOMP This field shall indicate if monitor compensation has been applied. Monitor compensations are necessary for proper display of System B data on a monitor. Since there is variation across monitors, it is generally better to save or transfer an image to another user without monitor compensation applied to the image.